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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/594,660

09/27/2006

Minoru Ito

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26646 7590 10/14/2009  
KENYON & KENYON LLP  
ONE BROADWAY  
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EXAMINER

YANG, JIE

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

10/14/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/594,660	<b>Applicant(s)</b> ITO ET AL.	
	<b>Examiner</b> JIE YANG	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11 June 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

Claim 1 has been amended, claim 5 is added as a new claim, claims 1-5 are pending in application.

#### ***Status of the Previous Rejections***

Previous rejection of claims 1-4 under 35 U.S.C. 103(a) as being unpatentable over Kojima et al (EP 1221493 A1, thereafter EP'493) is withdrawn in view of the applicant's amendment/remark marked 6/11/2009. However, a new ground(s) of rejection is made (see below) in view of newly found references.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, and 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oda Naoki (JP 09003597, thereafter JP'597).

Regarding claims 1 and 5, JP'597 teaches a steel for low temperature use with excellent toughness in a HAZ (Heat-affected zone) (Title and abstract of JP'597) with the vE<sub>-40</sub> (J) and vE<sub>-60</sub> (J) measurements (Table 2 of JP'597) for thick plate application

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(Example in paragraph [0042] of JP'597), which read on the limitation of a high-strength thick steel plat excellent in low temperature toughness at heat affect zone result from large input welding as recited in the instant claim 1. The composition comparison between the alloy of JP'597 and the alloy of the instant claims 1 and 5 is listed in the following table.

Element	From instant Claim 1 (in wt%)	JP'597 (in wt%)	Overlapping range (in wt%)
C	0.03-0.14	0.03-0.09	0.03-0.09
Si	0.30 or less	0.5 or less	0.30 or less
Mn	0.8-2.0	0.5-1.8	0.8-1.8
P	0.02 or less	0.02 or less	0.02 or less
S	0.005 or less	0.001-0.01	0.001-0.005
Al	0.001-0.040	0.005-0.02	0.005-0.02
N	0.0010-0.0100	0.002-0.006	0.002-0.006
Ni	0.8-4.0	0-1.5	0.8-1.5
Ti	0.005-0.030	0.005-0.02	0.005-0.02
Nb	0.003-0.040	0.03 or less	0.003-0.03
Fe	Balance	Balance	Balance
Instant claim 5			
Al	0.012-0.04	0.005-0.02	0.012-0.02

All of the composition ranges disclosed by JP'597 (abstract, table 1, and claims 1-4 of JP'597) overlap the composition ranges as recited in the instant claims, which is a prima facie case of obviousness. SEE MPEP 2144.05 I. It would have been obvious to one of ordinary skill in the art at the time the invention was made to select the claimed compositions

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of C, Si, Mn, P, S, Al, N, Ni, Ti, Nb, and Fe because JP'597 discloses the same utility throughout the disclosed ranges.

Regarding the equation [1] in the instant claim 1, which fully depends on the alloy's compositions, it is well settled that there is no invention in the discovery of a general formula if it covers a composition described in the prior art, In re Cooper and Foley 1943 C.D.357, 553 O.G.177; 57 USPQ 117, Taklatwalla v.Marburg. 620 O.G.685, 1949 C.D.77, and In re Pilling, 403 O.G.513, 44 F(2) 878, 1931 C.D.75. In the instant case, in the absence of evidence to the contrary, the selection of the proportions of elements: Ni, Mn, C, Cr, Mo, V, and Cu from JP'597 in order to meet the claimed equation would appear to require no more than routine investigation by those ordinary skilled in the art. In re Austin, et al., 149 USPQ 685, 688. The Examiner chooses the sample number 10 from the table 1 of JP'597 for calculation, sample 10 has composition ranges within the claimed composition ranges, the calculated Ce is about 0.38, the calculated Ni/Mn is 1, and the sample 10 meets the requirement of equation [1].

Regarding claim 3, JP'597 teaches adding 0.0002-0.0020wt%B in the steel, which overlaps the range of 0.0005 to 0.0050wt%B as recited in the instant claim.

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Regarding claim 4, JP'628 teaches optionally adding  $\leq 1.0\text{wt}\%\text{Cu}$ ,  $\leq 0.1\text{wt}\%\text{V}$ ,  $\leq 0.6\text{wt}\%\text{Cr}$ , and/or  $\leq 0.6\text{wt}\%\text{Mo}$  in the steel (Claim 2 of JP'628), which overlap the composition ranges of further adding one or more elements of:  $0.1\text{-}0.5\text{wt}\%\text{Cr}$ ,  $0.01\text{-}0.5\text{wt}\%\text{Mo}$ ,  $0.005\text{-}0.1\text{wt}\%\text{V}$ , and  $0.1\text{-}1.0\text{wt}\%\text{Cu}$  as recited in the instant claim.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP'597 in view of Kojima et al (EP 1221493 A1, thereafter EP'493).

Regarding claim 2, JP'597 teaches oxygen included oxide particles with the size of  $0.001\text{-}1.0\mu\text{m}$  and number of  $5 \times 10^3$  to  $1 \times 10^5$  Pieces/ $\text{mm}^2$ , which reads on the limitation of at least  $100/\text{mm}^2$  of oxide particles and overlapping the circle-equivalent diameter range of  $0.005$  to  $0.5\mu\text{m}$  as recited in the instant claim. JP'597 further teaches regulating oxygen from 20 to 80ppm, which overlaps the range of  $0.0010\text{-}0.0050\text{wt}\%$  oxygen as recited in the instant claim. JP'597 does not specify adding one or more of Ca, Mg, and REM in the steel.

EP'493 teaches a thick steel plate being excellent in CTOD (Crack Tip Opening Displacement—a toughness measurement method—noticed by the Examiner) characteristic in welding heat affected zone and having yield strength of 460MPa or more (Title of EP'493). EP'493 teaches the major composition ranges (abstract,

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claims 1-3, and paragraphs [0005]-[0007] of EP'493) overlap the composition ranges as recited in the instant invention. EP'493 teaches adding Mg: 0.0003-0.005wt% and one or more of Ca: 0.0005-0.005wt%; REM: 0.0005-0.01wt%, which overlaps the claimed ranges of optional elements. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to add the proper amount of Ca, Mg, or REM as demonstrated by EP'493 in the steel of JP'597 because EP'493 that a large number of ultra-fine 0.01 to 0.1  $\mu\text{m}$  particles of oxide composed of Mg and Al are dispersed in the steel (paragraph [0011] of EP'493).

Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ito Minoru et al (JP 2003-313628 A, thereafter JP'628).

Regarding claim 1, JP'628 teaches a steel product having superior toughness in a HAZ (Heat-affected zone) (abstract of JP'628) with the  $vE_{-40}$  (J) measurement (Table 2 of JP'628) for thick plate application (Example in paragraph [0079] of JP'628), which read on the limitation of a high-strength thick steel plate excellent in low temperature toughness at heat affect zone result from large input welding as recited in the instant claim. The composition comparison between the alloy of JP'628 and the alloy of the instant invention is listed in the following table.

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Element	From instant Claim 1 (in wt%)	JP'628 (in wt%)	Overlapping range (in wt%)
C	0.03-0.14	0.03-0.18	0.03-0.14
Si	0.30 or less	0.5 or less	0.30 or less
Mn	0.8-2.0	0.4-2.0	0.8-2.0
P	0.02 or less	0.02 or less	0.02 or less
S	0.005 or less	0.02 or less	0.005 or less
Al	0.001-0.040	0.005-0.07	0.005-0.04
N	0.0010-0.0100	0.0005-0.007	0.001-0.007
Ni	0.8-4.0	0.6-4.0	0.8-4.0
Ti	0.005-0.030	0.005-0.03	0.005-0.03
Nb	0.003-0.040	0.005-0.10	0.005-0.04
Fe	Balance	Balance	Balance

All of the composition ranges disclosed by JP'628 (abstract, table 1, and claims 1-3 of JP'628) overlap the composition ranges as recited in the instant claim, which is a prima facie case of obviousness. SEE MPEP 2144.05 I. It would have been obvious to one of ordinary skill in the art at the time the invention was made to select the claimed compositions of C, Si, Mn, P, S, Al, N, Ni, Ti, Nb, and Fe because JP'628 discloses the same utility throughout the disclosed ranges.

Regarding the equation [1] in the instant claim 1, which fully depends on the alloy's compositions, it is well settled that there is no invention in the discovery of a general formula if it covers a composition described in the prior art, In re Cooper and Foley 1943 C.D.357, 553 O.G.177; 57 USPQ 117, Taklatwalla v.Marburg. 620 O.G.685, 1949 C.D.77, and In re



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Pilling, 403 O.G.513, 44 F(2) 878, 1931 C.D.75. In the instant case, in the absence of evidence to the contrary, the selection of the proportions of elements: Ni, Mn, C, Cr, Mo, V, and Cu from JP'628 in order to meet the claimed equation would appear to require no more than routine investigation by those ordinary skilled in the art. In re Austin, et al., 149 USPQ 685, 688. The Examiner chooses the sample number 6 from the table 1 of JP'628 for calculation, sample 6 has a composition ranges within the claimed composition ranges, the calculated Ce is about 0.389, the calculated Ni/Mn is about 3.2, and the sample 6 meets the requirement of equation [1].

Regarding claim 2, JP'628 teaches adding 0.0005-0.005wt% Ca, which is within the range of 0.0003-0.005wt% Ca as recited in the instant claim. JP'628 teaches oxygen included particles in the number 100-3,000 pieces/mm<sup>2</sup> with circle-equivalent particle sizes of 0.005-2μm (Abstract of JP'628), which reads on the limitation of at least 100/mm<sup>2</sup> of oxide particles and overlapping the circle-equivalent diameter range of 0.005 to 0.5μm as recited in the instant claim. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to select proper amount Ca as demonstrated by JP'628 to obtain the desired number of oxygen included particles

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with the desired circle-equivalent diameter. Because JP'628 teaches the same thick steel plate with the overlapped oxygen included particle's number and circle-equivalent diameter as recited in the instant invention, the same amount of oxygen as claimed would be highly expected for the oxygen included particles of JP'628. MPEP 2112.01.

Regarding claim 3, JP'628 teaches adding 0.0005-0.0030wt%B in the steel, which is within the range of 0.0005 to 0.0050wt%B as recited in the instant claim.

Regarding claim 4, JP'628 teaches optionally adding  $\leq 1.0\text{wt}\%\text{Cu}$ ,  $\leq 0.1\text{wt}\%\text{V}$ ,  $\leq 0.6\text{wt}\%\text{Cr}$ , and/or  $\leq 0.6\text{wt}\%\text{Mo}$  in the steel (Claim 2 of JP'628), which overlap the composition ranges of further adding one or more elements of: 0.1-0.5wt%Cr, 0.01-0.5wt%Mo, 0.005-0.1wt%V, and 0.1-1.0wt%Cu as recited in the instant claim.

Regarding claim 5, JP'628 teaches adding 0.005 to 0.07wt%Al in the alloy, which overlaps the range of 0.012 to 0.040wt%Al as recited in the instant claim.

### ***Response to Arguments***

Applicant's arguments, see the Applicant arguments/remark, filed 6/11/2009, with respect to the rejection(s) of claim(s) 1-4 under 103 (a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further

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consideration, a new ground(s) of rejection is made in view of newly found references, which makes this office action non-final.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jie Yang whose telephone number is 571-270-1884.

The examiner can normally be reached on M-F, 7:30-5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-2721244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JY

/Roy King/  
Supervisory Patent Examiner, Art Unit 1793